

SEQUENCE LISTING

<110> BLANC, Veronique

THIBAUT, Denis

BAMAS-JACQUES, Nathalie

BLANCHE, Francis

COUZET, Joel

BARRIERE, Jean-Claude

DEBUSSCHE, Laurent

FAMECHON, Alain

PARIS, Jean-Marc

DUTRUC-ROSSET, Gilles

<120> Streptogramins And Method For Preparing Same By Mutasyntesis

<130> Streptogramin genes

<140> 08/765,907

<141> 1997-03-20

<160> 17

<170> PatentIn Ver. 2.0

<210> 1

<211> 2888

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 1

ctgcagttcc ccggggccac cgtgctcagc tcctcaccg aacggttct gcgcacggc 60
gggacggct gggcggagtc caaacccatc aagggcaccc gccccgcgg cgccggcccc 120
gcccaggacg ccgccgtcaa ggcctccctc gccgcggccg agaaggaccg cagcgagaac 180
ctgatgatcg tcgacctggt ccgaacgac ctcggccagg tctgcgacat cggctccgtc 240
cacgtaccgg gcctgttcga ggtggagacc tacgccaccg tccaccagct cgtcagcacg 300
gtccgcggcc gcctggcggc cgacgtctcc cggccccgcg cggtacgggc cgccttcccc 360
ggcgggtcga tgaccggcgc gcccaaggtc cgcaccatgc agttcatcga ccggctcgag 420
aaggggccgc gcggcgtgta ctcgggcgcg ctgggctact tcgccctcag cggcgcggcc 480
gacctcagca tcgtcatccg caccatcgtc gccaccgagg aggccgccac catcggcgtg 540
ggcggcgccg tcgtcgccct gtccgacccc gacgacgagg tccgcgaaat gctcctcaag 600
gcgcagacca ccctcgccgc cctgcgccag gcacacgcgg gcgccaccgc ctcggaccgt 660
gaactcctgg ccggcagcct gcggtgaccc acccaccgcc ccacccggc caccgcaacc 720
ccggctcacc cccggggcgg ccgcgcgcgg tgccgcccgg cgcccgaccc ggcgacgggt 780
ccgctcgcgg accgggtgac ggacccggcg gcggggccgg cggcggggcc ggacgtgggc 840
cgggacgtgg gcccggcgtc cccggcgacc ggcacggcgg cgggcccggg cgtgggccc 900

gcgtgcccgg cgaccggcac ggtggcgggg cggggcgggg gacggtcagt gcagggcggg 960
gaacatccgc gcgcacagcc gttccagctc cgcgccgtgc tcgccagca caccgcgcag 1020
ttcggcgaac agggcggcga acgtctctc gtcgccctc tcgacggcct gcccagccg 1080
caccaggccg cggcccagcg cctgccgcgc ggccggcgcg cgggggttgg cggcctggat 1140
gtcgaaatac acctccggcg tcccgccggc gatccgggcc agcagcgcca gcatcgccag 1200
atgcggcggc ggggactgt cccgcagcg cccacgtcc accgacagct caccaggcc 1260
cagcccgaag gccagcaccg cggcatcgt ggcgccctgc tgcggcgcg tcagctcgtc 1320
gtgccggcg gccggcatc ccaccaccg ggccccccac ccggccacca gtcaccag 1380
ggccgcaca ccggggccgt cggtgaccac caccgccgc accggccgc cctgaagacc 1440
cagcgagggg gcgaacatc ggttcagccc caccgcctgc agccccggcg ccgcctcag 1500
cagccgccg gcgatccggc tcttgaccga caaggtgtc gcgagcacc caccgggccc 1560
catcacccc gccagcact ccaccgctc ccacgccacc ggctccggca ccgccagcac 1620
caccacgtc gccgccgca gcgccgcac cgcctccggc ccggccgc gcacatcac 1680
ggccaccacc cgcacccgt ccgccgacc ggccccggc acgtccagc aggtcaccg 1740
ccccccgaa cgcaccagc agtggctgaa catcgggcc accgcaccg cccgcccac 1800
caccacaaa cgcccgaaca ccgaaccacc ctcacccgc gttccgac ccccggtag 1860
ggaggaagaa ccatgacccc gcccgccatc ccggccgcc cgccgccac cggggccgc 1920
cccgccaccg acccctcga cgcgtgcgc gcccgctgg acggcgcgga cgccgccctg 1980
ctggacgcc tccgcacag cctggacatc tgcctgcga tcggcgagta caagcgctc 2040
caccaggtgc cgatgatgca gcccaccgg atcgccagg tcacgcaa cgccgccgc 2100
tacgccgcg accacggcat cgacccgcc ttctgcga ccctgtacga cacgatc 2160
accgagacct gccgcctga ggacagtgg atgcctccg gcggcgcccc cgtccccag 2220
cccgtagcag cgtccgcgt cgcgcggggg gccgtgtgt gaccgccgc gcaccacc 2280

209230-47928660

tcgccaggc gctggacgag gccaccgggc agctgaccgg cgccgggatc accgccgacg 2340
ccgccggggc cgacaccggg ctgctggccg cccacgcctg ccaggtgcc ccgggggacc 2400
tcgacacctg cctggccggc ccggtgccgc cccggttctg gcactacgtc cggcgccgtc 2460
tgaccgcga accgccgaa cgcacgtcg gccacgccta ctcatgggc caccgttcg 2520
acctggcccc cggcgtcttc gtcccaaac ccgagaccga ggagatcacc cgggacgcca 2580
tcgccgcct ggaggccctc gtccgccgcg gcaccaccgc acccctggtc gtcgacctgt 2640
gcgccggacc gggcaccatg gccgtcacc tgcccccca cgtaccggcc gcccgctcc 2700
tgggcatcga actctccag gccgccgcc gcgccggccg gcgcaacgcc cgcggcaccg 2760
gcgccgcat cgtgcagggc gacgccgcg acgccttccc cgaactgagc ggcaccgtcg 2820
acctgtcgt caccaaccg ccctacatcc ccatcggact gcgcacctcc gcaccgaag 2880
tgctcgag 2888

<210> 2

<211> 888

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 2

atgaggggtg gttcgtgtt cgggcgtgt gtggtggtg gcggggccgg tgcggtgggc 60

cgcatgttca gccactggct ggtgcgttcg ggggtggcgg tgacctggct ggacgtggcc 120
 ggggccgggtg cggcggacgg ggtgcgggtg gtggccgggtg atgtgcggcg gccggggccg 180
 gaggcggtcg cggcgctggc ggcggcggac gtggtggtgc tggcggtgcc ggagccgggtg 240
 gcgtgggagg cgggtggaggt gctggcgggg gtgatgcggc ccggtgcggt gctcgcggac 300
 acctgtcgg tcaagagccg gatcgccggg cggctgcgtg aggcggcgcc ggggctgcag 360
 gcggtggggc tgaacccgat gttcggccc tcgtgggtc ttcagggcg gccggtggcg 420
 gcggtggtgg tcaccgacgg gcccggtgtg cgggccctgg tggagctgtt ggccgggtgg 480
 gggggccggg tgggtggagt gccggcgcg cggcacgacg agctgaccgc cgcgcagcag 540
 gccgccacgc atgccgcggt gctggccttc gggctgggcc tgggtgagct gtcggtggac 600
 gtggggggcg tgcgggacag tgccccgccc ccgcatctgg cgatgctggc gctgctggcc 660
 cggatcgccg gcgggacgcc ggaggtgtat ttcacatcc aggcggccaa ccccggcgcg 720
 ccggccgcgc ggcaggcgct gggccgcggc ctggtgcggc tggggcaggc cgtcgagagg 780
 ggcgacgagg agacgttcgc cgccctgttc gccgaactgc gcggtgtgct gggcgagcac 840
 ggcgcggagc tggaacggct gtgcgcggcg atgttcaccg ccctgcac 888

<210> 3

<211> 297

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 3

Met Arg Gly Gly Ser Val Phe Gly Arg Cys Val Val Val Gly Gly Ala
1 5 10 15

Gly Ala Val Gly Arg Met Phe Ser His Trp Leu Val Arg Ser Gly Val
20 25 30

Ala Val Thr Trp Leu Asp Val Ala Gly Ala Gly Ala Ala Asp Gly Val
35 40 45

Arg Val Val Ala Gly Asp Val Arg Arg Pro Gly Pro Glu Ala Val Ala
50 55 60

Ala Leu Ala Ala Ala Asp Val Val Val Leu Ala Val Pro Glu Pro Val
65 70 75 80

Ala Trp Glu Ala Val Glu Val Leu Ala Gly Val Met Arg Pro Gly Ala
85 90 95

Val Leu Ala Asp Thr Leu Ser Val Lys Ser Arg Ile Ala Gly Arg Leu
100 105 110

Arg Glu Ala Ala Pro Gly Leu Gln Ala Val Gly Leu Asn Pro Met Phe
115 120 125

Ala Pro Ser Leu Gly Leu Gln Gly Arg Pro Val Ala Ala Val Val Val
130 135 140

Thr Asp Gly Pro Gly Val Arg Ala Leu Val Glu Leu Val Ala Gly Trp
145 150 155 160

Gly Ala Arg Val Val Glu Met Pro Ala Arg Arg His Asp Glu Leu Thr
165 170 175

Ala Ala Gln Gln Ala Ala Thr His Ala Ala Val Leu Ala Phe Gly Leu
180 185 190

Gly Leu Gly Glu Leu Ser Val Asp Val Gly Ala Leu Arg Asp Ser Ala
195 200 205

Pro Pro Pro His Leu Ala Met Leu Ala Leu Leu Ala Arg Ile Ala Gly
210 215 220

Gly Thr Pro Glu Val Tyr Phe Asp Ile Gln Ala Ala Asn Pro Gly Ala
 225 230 235 240

Pro Ala Ala Arg Gln Ala Leu Gly Arg Gly Leu Val Arg Leu Gly Gln
 245 250 255

Ala Val Glu Arg Gly Asp Glu Glu Thr Phe Ala Ala Leu Phe Ala Glu
 260 265 270

Leu Arg Gly Val Leu Gly Glu His Gly Ala Glu Leu Glu Arg Leu Cys
 275 280 285

Ala Arg Met Phe Thr Ala Leu His Pro
 290 295

203043660

<210> 4

<211> 387

<212> DNA

<213> Streptomyces pristinaespiralis

<400> 4

atgacccgc ccgcatccc cgcgccccg cccgccaccg ggcccgcgcc cgccaccgac 60

cccctcgacg cgctgcgcgc ccgcctggac gccgcggacg ccgcctgct ggacgccgtc 120

cgcacacgcc tggacatctg cctgcgcacg gccgagtaca agcgctcca ccaggtgccg 180

atgatgcagc cccaccgat cgcgcaggtc cagccaacg ccgcccgtc cgccgccgac 240

cacggcatcg acccgcctt cctgcgcacc ctgtacgaca cgatcatcac cgagacctgc 300
 cgctcgagg acgagtggat cgcctccggc ggcgcccccg tccccacgcc cgtgcacgcg 360
 tccgcgtccg cgcggggggc cgtgtcg 387

<210> 5

<211> 130

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 5

Met Thr Pro Pro Ala Ile Pro Ala Ala Pro Pro Ala Thr Gly Pro Ala
 1 5 10 15
 Ala Ala Thr Asp Pro Leu Asp Ala Leu Arg Ala Arg Leu Asp Ala Ala
 20 25 30
 Asp Ala Ala Leu Leu Asp Ala Val Arg Thr Arg Leu Asp Ile Cys Leu
 35 40 45
 Arg Ile Gly Glu Tyr Lys Arg Leu His Gln Val Pro Met Met Gln Pro
 50 55 60
 His Arg Ile Ala Gln Val His Ala Asn Ala Ala Arg Tyr Ala Ala Asp
 65 70 75 80
 His Gly Ile Asp Pro Ala Phe Leu Arg Thr Leu Tyr Asp Thr Ile Ile
 85 90 95

Thr Glu Thr Cys Arg Leu Glu Asp Glu Trp Ile Ala Ser Gly Gly Ala
 100 105 110

Pro Val Pro Thr Pro Val His Ala Ser Ala Ser Ala Arg Gly Ala Val
 115 120 125

Ser Pro
 130

<210> 6

<211> 4496

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 6

ctcagacagg tgccccacct cggcggcacg gtgcgcgggc agcgcgaaca ccggcagcgc 60
 gccagacgg aacagcgcga agcacaccgc gacgaactcg ggcgtgttcg gcagctgcac 120
 cagcaccgc tcgccggcgc cgatcccgcg cgccgcgaac cccgccgcca gccggtcgca 180
 ccagcggtec agggcacggt aggtgacacg ggagcaccgc tccgcgccga ccagcgcctc 240
 ccgctcgccg tactgtccg cccagcggcc cagcagcatg cccagcggct cgccccgcca 300
 gtagccggcc gcccggtact tcgcggccac atcctcgggc cagggaacgc atccgtccag 360
 catcgttggc cctttccggc ttctctctcg cgtcgcgcc agtgtcgga gcgccgttga 420
 cagcccgctg atgcgccgcg cccgcgcgcc gccgtccgt caggagccga tcagggcggc 480

gtcagccggg ccggacagga tgccgccac ggggccggc acaccgggc gcggcgacag 540
 cgggccggcg accggcaggc cgacaccacg cacggacgag aagaaacaac acaaggggag 600
 caccgatgg agacctgggt cctgggccgg cgcgacgtcg ccgaggtgtt ggccgccgtc 660
 ggccgcgacg aactcatgcg ccgcatcgc gaccgcctca ccggcggact ggccgagatc 720
 ggccgcggcg agcggcacct gtccccgtg cgcggcggac tggaacgcag cgaaccctg 780
 cccggcatct gggaatggat gccgcaccgc gaaccggcg accacatcac cctcaagacc 840
 gtcggctaca gccccgcaa ccccgccgc ttggcctgc cgaccatct gggcaccgtc 900
 gccgctacg acgacaccac cggcgccctg accgccctga tggacggcgt gctgtcacc 960
 gccctgcgca ccggcgccgc ctccgccgtc gcctccgcc tgctggccc ccccgacagc 1020
 cacacctgg gactgategg caccggcgcc caggccgtca cccaactgca cgccctgtcc 1080
 ctggtactgc cctgcaacg ggccctggtg tgggacaccg accccgcca ccgggaaagc 1140
 ttgcccggc gcgccggtt caccggcgtc agcgtcgaga tgcggagcc cggccggtc 1200
 gccgccgagg ccgacgtcat ctccaccgc acctcggtg ccgtcgcca gggcccgtc 1260
 ctgcccgaca ccggcgccg cgagcacctg cacatcaac ccgtcggcgc ggacctgtc 1320
 ggcaagacgg aactgccgt cggcctgtc gagcgggct tctcaccgc cgaccaccc 1380
 gagcaggcgc tgcgcgagg cgagtgcag caactctcc ccgaccggt cgccccgag 1440
 ctggcccacc tgtgcgccga cccggcggcc gccgccggcc ggcaggacac cctgagcgtc 1500
 ttgactcca ccggttgc cttegaggac gccctggcga tggaagtgt cctegaggcc 1560
 gccgccgaac gggacctgg catccgggtg ggcacgaac accacccgg cgacgcctg 1620
 gacctacg cctccagcc cctgccctg cccctggccg ccccgcca ctgaccccc 1680
 cctttttcg ggacccccgc tcttttga gacccccgc cggccggccc ggccctctc 1740
 ccgccggccc ccatgcccg ccgggccggg gcaccacga cgccctcgag aggagagaga 1800
 tgccccccac ccccgccc accaccgac agggcgccg tgaactgtc gcctggctc 1860

gcgagatgcg ccaccaccac cccgtccacg aggacgaata cggcgccttc cacgtcttcc 1920
ggcacgccga cgtcttcacc gtcgcctccg accccggcgt ctactctcc cagctcagcc 1980
ggctacggcc cggctcccag gcggtgagcg aacagatcct gtcggtcac gacccgccga 2040
tgcaccgcac cctgcgccg ctggtcagcc aggccttcac ccccgacc gtcgccgacc 2100
tcgaaccacg cgtcaccgaa ctggccgggc aactgtcga cgcgctcga ggcgacacgt 2160
tcgacctgt cggcgacttc gcctaccgc tgcctgtgat cgtgatgcc gaactctcg 2220
ggtgccgcc cggcgaccgc accctgttc gctctggtc cgaccgatg ctgcagatgc 2280
aggcgcgcga cccggcggac atgcagtcg gcgacgacgc cgacgaggac taccaacgcc 2340
tcgtcaaaga acccatgcgc gccatgcacg cctacctca cgaccacgtc accgaccgcc 2400
gcgcccgcgc cggaacgac ctgatctccg cactcgtcgc cggccgctg gagggcgaac 2460
gactaccga cgagcagatc gtcgaatcg gggcgctgct gctgatggcc ggccacgtct 2520
ccacctccat gctgctggc aacaccgtgc tgtcctgaa ggaccacccc cgggccgagg 2580
ccgcccccgc cggcgaccgg tcctgatcc ccgcctgat cgaagaagta ctgcggctgc 2640
ggccgccgat caccgtcatg gcccgcgtca ccaccaagga caccgtctc gccggcacca 2700
ccatccccgc cggacgcatg gtcgtgccct cctgtctgc cgccaaccac gacgaacagg 2760
tcttaccga ccccgaccac ctgacctcgc ccgcgaagg ccgccagatc gccttcggcc 2820
acggcatcca ctactgcctg ggcgccccgc tcggcgccct ggaggggcgc atcgccctgg 2880
aagccctctt cgaccgatc cccgacttct cgcccaccga cggcgcaaaa ctgcgctacc 2940
accgcgacgg actgttcggc gtaagaacc tgccgtgac cgtacggcgc ggctgacaca 3000
gacaaggggg ccacctggtg cgcaccgtgc gaacctgt gatcgacaac tacgactcgt 3060
tcacctaaa cctctccag atgtggccg aggtgaacgg cggcgctccg ctgctgtcc 3120
gcaacgacga caccgcacc tggcaggccc tggcgccggg cgacttcgac aacgtcgtc 3180
tctacccgg ccccgccac ccgcccaccg acaccgacct gggcctcagc cggcggtga 3240

tcaccgaatg ggacctgccg ctgctcgggg tgtgcctggg ccaccaggcc ctgtgcctgc 3300
 tcgccggcgc cgccgtcgtc caccgacccg aacctttca cggccgcacc agcgacatcc 3360
 gccacgacgg gcagggcctg ttgcgaaca tcccccccc gctgaccgtg gtccgtacc 3420
 actcgtgac cgtccggcaa ctgcccgcg acctgcgcgc caccgccac accgccgacg 3480
 ggcagctgat ggccgtgcc caccgccacc tgcctcgtt cggcgtgcag ttccacccg 3540
 aatcgatcag cagcgaacac ggccaccgga tgctcgcaa ctccgcgac ctgtccctgc 3600
 gcgcggccgg ccaccgcccc ccgcacaccg aacgcatacc cgcacccgca cccgccccg 3660
 ccccgcccc cgcaccggca ccgccgcgt ccgcgccgt gggggagtac cggctgcatg 3720
 tgcgcgaggt cgcctgcgtg cccgacgcgg acgccgcgtt caccgccctg ttgccgacg 3780
 ccccgcccc gttctggtc gacagcagcc gcgtcgagcc gggcctgcc cgttcacct 3840
 tcctcggcgc ccccgccggc ccgctcggcg aacagatcac ctacgacgtc gccgaccggg 3900
 ccgtgcgcgt caaggacggt tcaggcggcg agaccgccg gcccggcacc ctctcgacc 3960
 acctggaaca cgaactggcc gcccgcccc tgcgcgccac cggcctgcc ttcgagtca 4020
 acctcggcta cgtcggctac ctcggtacg agaccaagge cgacagcggc ggcgaggacg 4080
 cccaccgcgg cgaactgcc gacggcgctt tcatgttcgc cgaccggatg ctgcctcgc 4140
 accacgaaca ggggcgggccc tggtcctgg cactgagcag caccgacgg cccgccaccg 4200
 caccgccgc cgaacgtgg ctcaccgac ccgcccggac cctcgccacc accgcccc 4260
 gcccgccctt caccctgtg cccgacgacc aactgcccgc cctggacgtc cactaccgcc 4320
 acagcctgcc ccgtaccgg gaactggtc aggaatgcc ccgcctgatc accgacggcg 4380
 agacctacga ggtgtgcctg acgaacatgc tccgggtgcc cggccggatc gaccgctca 4440
 ccgcctaccg cgccctgcgc accgtcagcc ccgcccccta cggcgctac ctgcag 4496

<211> 1065

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 7

atggagacct gggctctggg ccggcgcgac gtcgccgagg tggaggccgc cgtcggccgc 60
gacgaactca tgcgcccat catcgaccgc ctaccggcg gactggccga gatcggccgc 120
ggcgagcggc acctgtccc gctgcgcggc ggactggaac gcagcgaacc cgtgcccggc 180
atctgggaat ggatgccga ccgcgaacc ggcgaccaca tcacctcaa gaccgtcggc 240
tacagccccg ccaaccccg ccgcttcggc ctccgacca tctgggcac cgtcggccgc 300
tacgacgaca ccaccggcg cctgaccgcc ctgatggac gctgctgct caccgccctg 360
cgcaccggcg ccgctccgc cgtgcctcc cgcctgctgg cccgccccga cagccacacc 420
ctgggactga tcggcaccgg cgcccaggcc gtcaccaac tgcacgccct gtccctggta 480
ctgcccctgc aacgggccct ggtgtgggac accgacccg cccaccggga aagcttcgc 540
cggcgcgccg cgttcaccgg cgtcagcgtc gagatgccg agccgcccc gatcggccgc 600
gaggccgacg tcattccac cgccacctg gtagcgtcg gccagggcc ggtcctgcc 660
gacaccggcg tccgcgagca cctgcacatc aacgccgtcg gcgcggacct cgtcggcaag 720
acggaactgc cgtcggcct gctcgagcgg gcttctgta ccgccacca ccccgagcag 780
gcgctgcgcg agggcgagtg ccagcaactc tccgccgacc ggtcggccc gcagctggcc 840
cacctgtgcg ccgacccggc ggccgccgc ggccggcagg acacctgag cgtcttcgac 900

tccaccggct tcgccttcga ggacgccctg gcgatggaag tgttcctcga ggccgccgcc 960

gaacgggacc tgggcatccg ggtgggcatac gaacaccacc ccggcgacgc cctggacccc 1020

tacgccctcc agcccctgcc cctgccccctg gccgcccccg cccac 1065

<210> 8

<211> 356

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 8

Met Glu Thr Trp Val Leu Gly Arg Arg Asp Val Ala Glu Val Val Ala
1 5 10 15

Ala Val Gly Arg Asp Glu Leu Met Arg Arg Ile Ile Asp Arg Leu Thr
20 25 30

Gly Gly Leu Ala Glu Ile Gly Arg Gly Glu Arg His Leu Ser Pro Leu
35 40 45

Arg Gly Gly Leu Glu Arg Ser Glu Pro Val Pro Gly Ile Trp Glu Trp
50 55 60

Met Pro His Arg Glu Pro Gly Asp His Ile Thr Leu Lys Thr Val Gly
65 70 75 80

Tyr Ser Pro Ala Asn Pro Gly Arg Phe Gly Leu Pro Thr Ile Leu Gly
85 90 95

Thr Val Ala Arg Tyr Asp Asp Thr Thr Gly Ala Leu Thr Ala Leu Met
100 105 110

Asp Gly Val Leu Leu Thr Ala Leu Arg Thr Gly Ala Ala Ser Ala Val
115 120 125

Ala Ser Arg Leu Leu Ala Arg Pro Asp Ser His Thr Leu Gly Leu Ile
130 135 140

Gly Thr Gly Ala Gln Ala Val Thr Gln Leu His Ala Leu Ser Leu Val
145 150 155 160

Leu Pro Leu Gln Arg Ala Leu Val Trp Asp Thr Asp Pro Ala His Arg
165 170 175

Glu Ser Phe Ala Arg Arg Ala Ala Phe Thr Gly Val Ser Val Glu Ile
180 185 190

Ala Glu Pro Ala Arg Ile Ala Ala Glu Ala Asp Val Ile Ser Thr Ala
195 200 205

Thr Ser Val Ala Val Gly Gln Gly Pro Val Leu Pro Asp Thr Gly Val
210 215 220

Arg Glu His Leu His Ile Asn Ala Val Gly Ala Asp Leu Val Gly Lys
225 230 235 240

Thr Glu Leu Pro Leu Gly Leu Leu Glu Arg Ala Phe Val Thr Ala Asp
245 250 255

His Pro Glu Gln Ala Leu Arg Glu Gly Glu Cys Gln Gln Leu Ser Ala
260 265 270

Asp Arg Leu Gly Pro Gln Leu Ala His Leu Cys Ala Asp Pro Ala Ala
275 280 285

Ala Ala Gly Arg Gln Asp Thr Leu Ser Val Phe Asp Ser Thr Gly Phe
290 295 300

Ala Phe Glu Asp Ala Leu Ala Met Glu Val Phe Leu Glu Ala Ala Ala
305 310 315 320

Glu Arg Asp Leu Gly Ile Arg Val Gly Ile Glu His His Pro Gly Asp
325 330 335

Ala Leu Asp Pro Tyr Ala Leu Gln Pro Leu Pro Leu Pro Leu Ala Ala
340 345 350

Pro Ala His Pro
355

<210> 9

<211> 1194

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 9

atgccccca cccccggcc caccaccgac gacggcggcc gtgaactgct cgctggctg 60
cgcgagatgc gccaccacca cccgtccac gaggacgaat acggtgctt ccacgtctt 120
cggcacgccg acgtctcac cgtcgctcc gacccggcg tctactctc ccagtcagc 180
cggctacggc ccggtccca ggcgtgagc gaacagatcc tgcggatc cgacccgccg 240
atgcaccgca ccctgcgccg cctggtcagc caggcctca cccccgcac cgtcgccgac 300
ctcgaaccac gcgtcaccga actggccggg caactgctc acgccgtcga cgcgacacg 360
ttcgacctc tcgcgactt cgcctaccg ctgccgtga tcgtgatcg cgaactctc 420
ggcgtgccg ccgccgacc caccctgtc cgtctctgt ccgaccgat gctgcagatg 480
caggtcgccg acccggcgga catgcagtc ggcgacgac cgacgagga ctaccaacg 540
ctcgtcaaag aacctatgc cgccatgcac gcctacctc acgaccagt caccgaccg 600
cgcgccccg ccgcgaacga cctgatctc gcactcgtc ccgcccgcgt ggaggcgaa 660

cgactcaccg acgagcagat cgtcgaattc ggggcgctgc tgctgatggc cggccacgtc 720
 tccacctcca tgctgctcgg caacaccgtg ctgtgcctga aggaccaccc ccggggccgag 780
 gccggcgccc gcggcgaccg gtccctgata cccgccctga tcgaagaagt actgcggctg 840
 cgggcgccga tcaccgtcat ggcccgctc accaccaagg acaccgtcct cgcgggcacc 900
 accatccccg ccggacgcat ggctgtgccc tccctgctgt ccgccaacca cgacgaacag 960
 gtcttcaccg accccgacca cctcgacctc gccgcgaag gccgccagat cgccttcggc 1020
 cagggcatcc actactgcct gggcgccccg ctgcgccgcc tggagggccg catcgccctg 1080
 gaagccctct tcgaccgatt ccccgacttc tcgccaccg acggcgcaaa actgcgctac 1140
 caccgcgacg gactgttcgg cgtcaagaac ctgccgctga ccgtacggcg cggc 1194

<210> 10

<211> 399

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 10

Met	Pro	Pro	Thr	Pro	Arg	Pro	Thr	Thr	Asp	Asp	Gly	Gly	Arg	Glu	Leu
1				5					10					15	
Leu	Ala	Trp	Leu	Arg	Glu	Met	Arg	His	His	His	Pro	Val	His	Glu	Asp
			20					25					30		

Glu Tyr Gly Ala Phe His Val Phe Arg His Ala Asp Val Leu Thr Val
35 40 45

Ala Ser Asp Pro Gly Val Tyr Ser Ser Gln Leu Ser Arg Leu Arg Pro
50 55 60

Gly Ser Gln Ala Leu Ser Glu Gln Ile Leu Ser Val Ile Asp Pro Pro
65 70 75 80

Met His Arg Thr Leu Arg Arg Leu Val Ser Gln Ala Phe Thr Pro Arg
85 90 95

Thr Val Ala Asp Leu Glu Pro Arg Val Thr Glu Leu Ala Gly Gln Leu
100 105 110

Leu Asp Ala Val Asp Gly Asp Thr Phe Asp Leu Val Ala Asp Phe Ala
115 120 125

Tyr Pro Leu Pro Val Ile Val Ile Ala Glu Leu Leu Gly Val Pro Pro
130 135 140

Ala Asp Arg Thr Leu Phe Arg Ser Trp Ser Asp Arg Met Leu Gln Met
145 150 155 160

Gln Val Ala Asp Pro Ala Asp Met Gln Phe Gly Asp Asp Ala Asp Glu
165 170 175

Asp Tyr Gln Arg Leu Val Lys Glu Pro Met Arg Ala Met His Ala Tyr
180 185 190

Leu His Asp His Val Thr Asp Arg Arg Ala Arg Pro Ala Asn Asp Leu
195 200 205

Ile Ser Ala Leu Val Ala Ala Arg Val Glu Gly Glu Arg Leu Thr Asp
210 215 220

Glu Gln Ile Val Glu Phe Gly Ala Leu Leu Leu Met Ala Gly His Val
225 230 235 240

Ser Thr Ser Met Leu Leu Gly Asn Thr Val Leu Cys Leu Lys Asp His
245 250 255

Pro Arg Ala Glu Ala Ala Ala Arg Ala Asp Arg Ser Leu Ile Pro Ala
260 265 270

Leu Ile Glu Glu Val Leu Arg Leu Arg Pro Pro Ile Thr Val Met Ala
275 280 285

Arg Val Thr Thr Lys Asp Thr Val Leu Ala Gly Thr Thr Ile Pro Ala
290 295 300

Gly Arg Met Val Val Pro Ser Leu Leu Ser Ala Asn His Asp Glu Gln
305 310 315 320

Val Phe Thr Asp Pro Asp His Leu Asp Leu Ala Arg Glu Gly Arg Gln
325 330 335

Ile Ala Phe Gly His Gly Ile His Tyr Cys Leu Gly Ala Pro Leu Ala
340 345 350

Arg Leu Glu Gly Arg Ile Ala Leu Glu Ala Leu Phe Asp Arg Phe Pro
355 360 365

Asp Phe Ser Pro Thr Asp Gly Ala Lys Leu Arg Tyr His Arg Asp Gly
370 375 380

Leu Phe Gly Val Lys Asn Leu Pro Leu Thr Val Arg Arg Gly Pro
385 390 395

<210> 11

<211> 1561

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 11

aagcttcccg accgggtgga ggtcgtcgac gcgttcccg tgaccggcct caacaaggte 60
gacaagaagg ccctggcggc cgacatcgcc gccaaagaccg cccccaccg ccccaccacc 120
gccggccacg gcccgaccac ggacggcgat acggccgggtg ggggtgggtc cgcgggcggg 180
gtgacggccg ccggtggcgg gcgggaggag gcggcgtgag cgggcccggg ccgagggcg 240
gctaccgggt gccgttcgcg cgacgcggtt cgtgtgtggg cgaggcggac ctggcggcgc 300
tgggcgaact ggtccgctcg ggccggtcgc tgacgtcggg ggtgtggcgg gagcggttcg 360
aggaacagtt cggccgctg accggcgccc ggcacgcgt cagtgtacc agcggcaccg 420
tcgcgtgga actggcgggtg cggtatgtgg acctggcgcc gggcgacgag gtgatcgcca 480
ccccgcagac gttccaggcg acggtgcagc cgctgctga ccacgacgtg cggctgcggt 540
tctgcgacat cgaccggac accctcaacc tcgaccggc ggtgtggag acgtgatca 600
ccgaccgcac ccgggcgatc ctgctcgtcc actacggcgg caaccggcc gacatggacc 660
gcatcatggc cctggcccgc aagcgcggca tcctgtcgt cgaggacagc gcgcacgcgc 720
tgggcgcgt gtaccggggg cggcgccgg gggcactggc ggacatcggc tgcttcaatt 780
tccactccac gaagaacatc accaccctcg gcgaggcggg catgatcacc ctgtcgcgtg 840
acgagtgggc ccagcgggtg ggacgtatcc gcgacaacga ggccgacggc gtgtacgcgg 900
cgctgccgga ctccgcgcgg gcgggtgctc cggcgctgct gccgtggatg aagttcgcgg 960
agggtgtgta cggtcaccgg gcggtcgggg tccgcggggc gggcacgaac gcgacgatgt 1020
cggaggcggc ggccggcggg ggcgtggtgc aactggcgtc gctggagcgg ttcgtggccc 1080
ggcgccggag catcgcgag cggtggacg aggccgtggc ctcggtggcc ggcaccggc 1140
tgcaccggc ggccggcgac agtctgcag cctaccacct gtacacgtt tcttcaccg 1200
gcggccggca ggtgcgggag cgttcgtgc gcgccctgga ccggtgggt gtggaggtcc 1260
agttgcggta ctccccctc catctgtgc ccgagtggcg gctgcgcggc cacgggccgg 1320
gcgagtgtcc gacggccgaa cgggtctggt tcgaggagca catgaacctg ccgtgccatc 1380

ccggtctgag tgacggccag gtcgactaca tggtcgaggc ggtcaccgc gccctgcacg 1440
 agggccacgg cacggggacg cgggtggcgg ccgggcacct gtgacaccgt ccgcatccgg 1500
 ccggtgggtt tccaagaccg agggagaggc aggcgtatgc cgttcacga agtgaagatc 1560
 t 1561

<210> 12

<211> 1233

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 12

gtgccgttcg cgcgacgcgg ttcggtggtg ggcgagggcg accctggcgc gctgggcgaa 60
 ctgggtccgct cgggccggtc gctgacgtcg ggggtgtggc gggagcgggt cgaggaacag 120
 ttgccccgcc tgaccggcgc ccggcacgcg ctcaagtgtca ccagcggcac cgtcgcgtg 180
 gaactggcgg tgcggatgct ggacctggcg ccgggcgacg aggtgatcgc caccgcag 240
 acgtccagg cgacggtgca gccgtgctc gaccacgacg tgcggctgcg gttctgcac 300
 atcgaccgcg acaccctcaa cctcgaccgc gcggtgctgg agacgtgat caccgaccgc 360
 acccgggcga tctgtctcgt ccaactacggc ggcaaccgcg ccgacatgga ccgcatcatg 420
 gccctggccc gcaagcgcgg catcatcgtc gtcgaggaca gcgcgcacgc gctgggcgcc 480

gtgtaccggg ggcggcggcc gggggcactg gcggacatcg gctgcttcac ttccactcc 540
acgaagaaca tcaccacct cggcgagggc ggcatgatca ccctgtcgcg tgacgagtgg 600
gccacgagg tgggacgtat ccgcgacaac gaggccgacg gcgtgtacgc ggcgctgccg 660
gactccgcgc gggcgggtgc tccggcgtg ctgccgtgga tgaagttcgc ggagggtgtg 720
tacggtcacc gggcggtcgg ggtccgcggg gcgggcacga acgcgacgat gtcggaggcg 780
gcggcggcgg tgggcgtggt gcaactggcg tcgctggagc ggttcgtggc ccggcggccg 840
agcatcgcgc agcggctgga cgaggccgtg gcctcgggtg ccggcaccgg gctgcaccgg 900
gcggcggcgg acagtctgca cgctaccac ctgtacacgt tcttctcac cggcggccgg 960
caggtgcggg agcggttcgt gcgcgccctg gaccggctgg gtgtggaggt ccagttgcgg 1020
tactccccgc tccatctgtc gcccgagtgg cggtgcgcg gccacgggcc gggcgagtgt 1080
ccgacggccg aacgggtctg gttcaggag cacaatgaacc tgccgtgcc accccgtctg 1140
agtgcggcc aggtcgacta catggtcgag gcggtcacc gcgccctgca cgagccccc 1200
ggcacgggga cgcgggtggc ggccgggcac ctg 1233

<210> 13

<211> 412

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 13

Ala Gly Ala Pro Ala Leu Leu Pro Trp Met Lys Phe Ala Glu Gly Val
225 230 235 240

Tyr Gly His Arg Ala Val Gly Val Arg Gly Ala Gly Thr Asn Ala Thr
245 250 255

Met Ser Glu Ala Ala Ala Ala Val Gly Val Val Gln Leu Ala Ser Leu
260 265 270

Glu Arg Phe Val Ala Arg Arg Arg Ser Ile Ala Gln Arg Leu Asp Glu
275 280 285

Ala Val Ala Ser Val Ala Gly Thr Arg Leu His Arg Ala Ala Ala Asp
290 295 300

Ser Leu His Ala Tyr His Leu Tyr Thr Phe Phe Leu Thr Gly Gly Arg
305 310 315 320

Gln Val Arg Glu Arg Phe Val Arg Ala Leu Asp Arg Leu Gly Val Glu
325 330 335

Val Gln Leu Arg Tyr Phe Pro Leu His Leu Ser Pro Glu Trp Arg Leu
340 345 350

Arg Gly His Gly Pro Gly Glu Cys Pro Thr Ala Glu Arg Val Trp Phe
355 360 365

Glu Glu His Met Asn Leu Pro Cys His Pro Gly Leu Ser Asp Gly Gln
370 375 380

Val Asp Tyr Met Val Glu Ala Val Thr Arg Ala Leu His Glu Ala His
385 390 395 400

Gly Thr Gly Thr Arg Val Ala Ala Gly His Leu Pro
405 410

<210> 14

<211> 2220

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 14

ggcgtaaga acctgccgct gaccgtacgg cgcggctgac acagacaagg gggccacctg 60
gtgcgcaccg tgcgaacct gctgatcgac aactacgact cggtcaccta caacctcttc 120
cagatgctgg ccgaggtgaa cggcgccgct ccgctcgtcg tccgcaacga cgacaccgcg 180
acctggcagg ccttggcgcc gggcgacttc gacaacgtcg tcgtctcacc cggccccggc 240
caccgcgcca ccgacaccga cctgggcctc agccgccggg tgatcaccga atgggacctg 300
ccgctgctcg ggggtgtcct gggccaccag gccctgtgcc tgctcgccgg cgccgccgtc 360
gtccacgcac ccgaacctt tcacggccgc accagegaca tccgccacga cgggcagggc 420
ctgttcgca acatccctc cccgtgacc gtggtccgct accactcgt gaccgtccgg 480
caactgccc cgcacctgcg cgccaccgcc cacaccgcc acgggcagct gatggccgtc 540
gccaccgcc acctgcccc ctccggcgtg cagttccacc ccgaatgat cagcagcgaa 600
cacggccacc ggatgctgc caacttcgc gacctgtccc tgcgcgcggc cgccaccgc 660
ccccgcaca ccgaacgat acccgaccc gcaccgccc ccgccccgc ccccgaccg 720
gcaccgccc cgtccgcgc ggtgggggag taccggctgc atgtgcgca ggtcgcctgc 780
gtgcccgacg cggacgccgc gttaccgcc ctgttcgcc agccccggc ccggttctgg 840
ctcgacagca gccgcgtga gccgggcctc gcccgctca cttcctcgg cggccccgc 900
ggcccgctcg gcgaacagat cacctacgac gtcgccgacc gggccgtgcg cgtcaaggac 960
ggttcaggcg gcgagaccg ccggccccgc acctcttcg accacctgga acacgaactg 1020

gcccgcgcg ccctgcccgc caccggcctg cccttcgagt tcaacctcgg ctacgtcggc 1080
 tacctcggct acgagaccaa ggccgacagc ggccggcgagg acgcccaccg cggcgaactg 1140
 cccgacggcg ccttcatgtt cggcgaccgg atgctcgcgc tcgaccacga acagggggcg 1200
 gcctggctcc tggcactgag cagcaccga cggcccgcga ccgcaccgc cgcgaacgc 1260
 tggtcaccg acggcgccc gaccctgcc accaccgcc cccggccgc cttaccctg 1320
 ctggcgagc accaactgcc cgccctggac gtccactacc gccacagcct gcccgcgtac 1380
 cgggaactgg tcgaggaatg ccggcgctg atcaccgacg gcgagaccta cgaggtgtgc 1440
 ctgacgaaca tgctccgggt gcccggccgg atcgaccgc tcaccgccta ccgcgcctg 1500
 cgcaccgtca gcccgcgcc ctacggcgc tacctgcagt tcccggggc caccgtgtc 1560
 agctcctcac ccgaacggtt cctgcgcatc ggccggcagc gttgggcgga gtccaaacc 1620
 atcaaggga cccgccccg cggcgccggc cccggccagg acggcgccgt caaggcctcc 1680
 ctgcccggc ccgagaagga ccgcagcgag aacctgatga tcgtcgacct ggtccgaac 1740
 gacctggcc aggtctgca catcggtcc gtccactac cgggcctgtt cgaggtggag 1800
 acctacgca ccgtccacca gctcgtcagc acggtccgc gccgcctggc ggccgacgtc 1860
 tccgcccc gcgcggtacg ggccgcctc cccggcgggt cgatgaccgg cgcgcccaag 1920
 gtccgacca tgcagttcat cgaccggtc gagaaggcc cgcgcggcgt gtactcggc 1980
 gcgtgggct acttcgcct cagcggcgc gccgacctc gcatcgtcat ccgcaccatc 2040
 gtcgccacc aggaggcgc caccatcggc gtggcgggc ccgtcgtgc cctgtccgac 2100
 cccgacgac aggtccgca aatgctctc aaggcgaga ccaccctgc cgcctgcgc 2160
 caggcacag cggcgccac gcctcggac cgtgaactc tggccggcag cctgcggtga 2220

<210> 15

<211> 719

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 15

202504232256

Val Arg Thr Val Arg Thr Leu Leu Ile Asp Asn Tyr Asp Ser Phe Thr
1 5 10 15
Tyr Asn Leu Phe Gln Met Leu Ala Glu Val Asn Gly Ala Ala Pro Leu
20 25 30
Val Val Arg Asn Asp Asp Thr Arg Thr Trp Gln Ala Leu Ala Pro Gly
35 40 45
Asp Phe Asp Asn Val Val Val Ser Pro Gly Pro Gly His Pro Ala Thr
50 55 60
Asp Thr Asp Leu Gly Leu Ser Arg Arg Val Ile Thr Glu Trp Asp Leu
65 70 75 80
Pro Leu Leu Gly Val Cys Leu Gly His Gln Ala Leu Cys Leu Leu Ala
85 90 95
Gly Ala Ala Val Val His Ala Pro Glu Pro Phe His Gly Arg Thr Ser
100 105 110
Asp Ile Arg His Asp Gly Gln Gly Leu Phe Ala Asn Ile Pro Ser Pro
115 120 125
Leu Thr Val Val Arg Tyr His Ser Leu Thr Val Arg Gln Leu Pro Ala
130 135 140
Asp Leu Arg Ala Thr Ala His Thr Ala Asp Gly Gln Leu Met Ala Val
145 150 155 160

Ala His Arg His Leu Pro Arg Phe Gly Val Gln Phe His Pro Glu Ser
165 170 175

Ile Ser Ser Glu His Gly His Arg Met Leu Ala Asn Phe Arg Asp Leu
180 185 190

Ser Leu Arg Ala Ala Gly His Arg Pro Pro His Thr Glu Arg Ile Pro
195 200 205

Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Ala Pro Pro Ala
210 215 220

Ser Ala Pro Val Gly Glu Tyr Arg Leu His Val Arg Glu Val Ala Cys
225 230 235 240

Val Pro Asp Ala Asp Ala Ala Phe Thr Ala Leu Phe Ala Asp Ala Pro
245 250 255

Ala Arg Phe Trp Leu Asp Ser Ser Arg Val Glu Pro Gly Leu Ala Arg
260 265 270

Phe Thr Phe Leu Gly Ala Pro Ala Gly Pro Leu Gly Glu Gln Ile Thr
275 280 285

Tyr Asp Val Ala Asp Arg Ala Val Arg Val Lys Asp Gly Ser Gly Gly
290 295 300

Glu Thr Arg Arg Pro Gly Thr Leu Phe Asp His Leu Glu His Glu Leu
305 310 315 320

Ala Ala Arg Ala Leu Pro Ala Thr Gly Leu Pro Phe Glu Phe Asn Leu
325 330 335

Gly Tyr Val Gly Tyr Leu Gly Tyr Glu Thr Lys Ala Asp Ser Gly Gly
340 345 350

Glu Asp Ala His Arg Gly Glu Leu Pro Asp Gly Ala Phe Met Phe Ala
355 360 365

Asp Arg Met Leu Ala Leu Asp His Glu Gln Gly Arg Ala Trp Leu Leu
370 375 380

Ala Leu Ser Ser Thr Arg Arg Pro Ala Thr Ala Pro Ala Ala Glu Arg
385 390 395 400

Trp Leu Thr Asp Ala Ala Arg Thr Leu Ala Thr Thr Ala Pro Arg Pro
 405 410 415
 Pro Phe Thr Leu Leu Pro Asp Asp Gln Leu Pro Ala Leu Asp Val His
 420 425 430
 Tyr Arg His Ser Leu Pro Arg Tyr Arg Glu Leu Val Glu Glu Cys Arg
 435 440 445
 Arg Leu Ile Thr Asp Gly Glu Thr Tyr Glu Val Cys Leu Thr Asn Met
 450 455 460
 Leu Arg Val Pro Gly Arg Ile Asp Pro Leu Thr Ala Tyr Arg Ala Leu
 465 470 475 480
 Arg Thr Val Ser Pro Ala Pro Tyr Ala Ala Tyr Leu Gln Phe Pro Gly
 485 490 495
 Ala Thr Val Leu Ser Ser Ser Pro Glu Arg Phe Leu Arg Ile Gly Ala
 500 505 510
 Asp Gly Trp Ala Glu Ser Lys Pro Ile Lys Gly Thr Arg Pro Arg Gly
 515 520 525
 Ala Gly Pro Ala Gln Asp Ala Ala Val Lys Ala Ser Leu Ala Ala Ala
 530 535 540
 Glu Lys Asp Arg Ser Glu Asn Leu Met Ile Val Asp Leu Val Arg Asn
 545 550 555 560
 Asp Leu Gly Gln Val Cys Asp Ile Gly Ser Val His Val Pro Gly Leu
 565 570 575
 Phe Glu Val Glu Thr Tyr Ala Thr Val His Gln Leu Val Ser Thr Val
 580 585 590
 Arg Gly Arg Leu Ala Ala Asp Val Ser Arg Pro Arg Ala Val Arg Ala
 595 600 605
 Ala Phe Pro Gly Gly Ser Met Thr Gly Ala Pro Lys Val Arg Thr Met
 610 615 620
 Gln Phe Ile Asp Arg Leu Glu Lys Gly Pro Arg Gly Val Tyr Ser Gly
 625 630 635 640

Ala Leu Gly Tyr Phe Ala Leu Ser Gly Ala Ala Asp Leu Ser Ile Val
645 650 655

Ile Arg Thr Ile Val Ala Thr Glu Glu Ala Ala Thr Ile Gly Val Gly
660 665 670

Gly Ala Val Val Ala Leu Ser Asp Pro Asp Asp Glu Val Arg Glu Met
675 680 685

Leu Leu Lys Ala Gln Thr Thr Leu Ala Ala Leu Arg Gln Ala His Ala
690 695 700

Gly Ala Thr Ala Ser Asp Arg Glu Leu Leu Ala Gly Ser Leu Arg
705 710 715

<210> 16

<211> 962

<212> DNA

<213> *Streptomyces pristinaespiralis*

<400> 16

ctcgaggacg agtggatcgc ctccggcggc gccccgtcc ccacgccgt gcacgcgtcc 60

gcgtccgcgc ggggggccgt gctgtgaccg ccgccgcacc caccctcgcc caggcgtgg 120

acgaggccac cgggcagctg accggcgccg ggatcaccgc cgacgccgcc cgggccgaca 180

cccggtgct ggccgccac gcctgccagg tcgccccggg ggacctcgac acctgcctgg 240

ccggccccgt gccgccccg ttctggcact acgtccggcg ccgtctgacc cggaacccg 300

ccgaacgcat cgtcggccac gcctacttca tgggccaccg cttcgacctg gcccccggcg 360
 tcttcgtccc caaaccgag accgaggaga tcaccggga cgccatgcc cgcctggagg 420
 cctcgtccg ccgcggcacc accgcacccc tggcgtcga cctgtgcgc ggaccgggca 480
 ccatggccgt caccctggcc cgccacgtac cggccgccc cgtcctgggc atcgaactct 540
 cccaggccgc cgcccgccc gcccggcga acgcccggg caccggcgcc cgcatcgtgc 600
 agggcgacgc ccgcgacgc tccccgaac tgagcggcac cgtcgacctc gtcgtacca 660
 accgccccta caccceatc ggactgcga cctccgacc cgaagtgtc gagcacgacc 720
 cgccgctggc cctgtgggc ggggaggagg gcctcggcat gatccgccc atggaacgca 780
 ccgcggccc gctgtggcc cccggcggcg tctgtctct cgaacacggc tctaccaac 840
 tcgctcgt gccgcccgt tccgcgcaa ccggccgtg gagccacgc tcgtcccgtc 900
 ccactgcaa cgacggctgc ctgaccgcc tacgcaacca cactgcga ccgcccgcct 960
 ga 962

<210> 17

<211> 292

<212> PRT

<213> Streptomyces pristinaespiralis

<400> 17

2000-04-09 14:00:00

Val Thr Ala Ala Ala Pro Thr Leu Ala Gln Ala Leu Asp Glu Ala Thr			
1	5	10	15
Gly Gln Leu Thr Gly Ala Gly Ile Thr Ala Asp Ala Ala Arg Ala Asp			
	20	25	30
Thr Arg Leu Leu Ala Ala His Ala Cys Gln Val Ala Pro Gly Asp Leu			
	35	40	45
Asp Thr Cys Leu Ala Gly Pro Val Pro Pro Arg Phe Trp His Tyr Val			
	50	55	60
Arg Arg Arg Leu Thr Arg Glu Pro Ala Glu Arg Ile Val Gly His Ala			
65	70	75	80
Tyr Phe Met Gly His Arg Phe Asp Leu Ala Pro Gly Val Phe Val Pro			
	85	90	95
Lys Pro Glu Thr Glu Glu Ile Thr Arg Asp Ala Ile Ala Arg Leu Glu			
	100	105	110
Ala Leu Val Arg Arg Gly Thr Thr Ala Pro Leu Val Val Asp Leu Cys			
	115	120	125
Ala Gly Pro Gly Thr Met Ala Val Thr Leu Ala Arg His Val Pro Ala			
	130	135	140
Ala Arg Val Leu Gly Ile Glu Leu Ser Gln Ala Ala Ala Arg Ala Ala			
145	150	155	160
Arg Arg Asn Ala Arg Gly Thr Gly Ala Arg Ile Val Gln Gly Asp Ala			
	165	170	175
Arg Asp Ala Phe Pro Glu Leu Ser Gly Thr Val Asp Leu Val Val Thr			
	180	185	190
Asn Pro Pro Tyr Ile Pro Ile Gly Leu Arg Thr Ser Ala Pro Glu Val			
	195	200	205
Leu Glu His Asp Pro Pro Leu Ala Leu Trp Ala Gly Glu Glu Gly Leu			
	210	215	220
Gly Met Ile Arg Ala Met Glu Arg Thr Ala Ala Arg Leu Leu Ala Pro			
225	230	235	240

Gly Gly Val Leu Leu Leu Glu His Gly Ser Tyr Gln Leu Ala Ser Val
245 250 255

Pro Ala Leu Phe Arg Ala Thr Gly Arg Trp Ser His Ala Ser Ser Arg
260 265 270

Pro Thr Cys Asn Asp Gly Cys Leu Thr Ala Val Arg Asn His Thr Cys
275 280 285

Ala Pro Pro Ala
290

20220114-093000